



The Heterodyne

**Bulletin of the West Valley Amateur Radio Association
An Affiliated Club of the American Radio Relay League**

**West Valley Amateur Radio Association, W6PIY — <http://www.wvara.org>
P.O. Box 6544
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Editor: Loren Singh, AD6YU — ad6yu@yahoo.com

June 2008

Next Meeting, New Time: Wednesday, **7:00 p.m.**, June 18, 2008 at the American Red Cross, 2731 North First Street at Plumeria (between Trimble and Montague Expressway) in San José. Speaker: Jim Peterson, K6EI — Subject: "Field Day Preparation"

Dues: All WVARA members who have not yet paid their dues for calendar year 2008 are requested to do so. Basic membership dues are \$15.00 per year. Go to the club web site to see the dues rates for other types of membership, enhanced repeater privileges, and so forth. Payment by PayPal is available.

WVARA will host the ASVARO Flea Market, June 14, 2008 at DeAnza College at the corner of Stevens Creek Boulevard and South Stelling Road in Cupertino. The big day is Saturday, June 14, but our involvement actually starts at 5 p.m. on Friday night, June 13 with the loading of the Red Cross truck in Palo Alto with tables, tent, and supplies. We need four (4) volunteers that night.

We also need other volunteers on Saturday for this fund-raising event, the only fund-raiser of the year! If you can volunteer for more than one shift, please do so! Here are the Saturday shifts we need to cover with volunteers:

- (1) 5 a.m. to 7 a.m. — Set up and operate the food booth (Needed: 5 volunteers)
- (2) 7 a.m. to 10 a.m. — Operate the food booth (Needed: 3 volunteers)
- (3) 10 a.m. to 12 noon — Operate and tear down the food booth (Needed: 5 volunteers)
- (4) 12 noon — Travel with the Red Cross truck to Palo Alto and unload the truck (Needed: 4 volunteers).

Please contact Ralf Erickson, WA6CQA at wa6cqa@sbcglobal.net .

Seminar and Examination: Amateur Radio ("Ham") License and Communications Course, Tuesdays, 6:30 p.m. to 9 p.m., July 1, 8, 15 and 22 (July 22 is examination night). Also, Emergency Communications Course for Ham Radio and CERT, Tuesday, July 29, 2008, 6:30 p.m. to 9:30 p.m. Contact Ken Dueker, kdueker@powerflare.com . Sponsored by Menlo Park Fire Protection District.

Boy Scout Hi-Sierra International Rendezvous 2008: August 10-16, 2008. A Ham Radio station will be a feature of this event and operators are needed. If you cannot participate on site, stand by for contacts. For more information please contact Gary Hendra, W6NOE, gary.hendra@comcast.net or rendezvous@sccbsa.org .

Club Net: Tuesday, 8:30 p.m. on our club repeaters:

WVARA Repeaters (W6PIY)			
Band	MHz	PL	Status
6 Meters	52.580-	151.4 Hz	Down*
2 Meters	147.39+	151.4 Hz	Operating
1.25 Meters	223.96-	156.7 Hz	Operating
0.70 Meter	441.35+	88.5 Hz	Operating
0.23 Meter	1286.2-	100 Hz	Operating
Note: *6M repeater is out of service. AD6CL is working to restore operation.			

WVARA Tuesday Night Net Check-ins:

Call Sign	Name	May 13, 2008	May 20, 2008	May 27, 2008	June 3, 2008
AB6XS	Kevin	X	X		X
AD6CL	Chuck				X
AD6YU	Loren	X #	X		X
AE6LL	Doug	X			
K6EBN	Eben	X	X	X	X
KF6UTE	Casey	X			X
KG6BKI	Brian	X		X	
KG6MYR	Harry	X		X	X
KK6VF	Kevin	X	X #		X #
N6BIH	Senad				X
N6RDG	Robert				X
NU6P	John	X		X	
W6HOC	Howard	X	X		
W6TQG	Phil	X		X #	X
W6ZZZ	Marc	X		X	X
WB6KHP	Dave	X	X	X	X
Notes: X — Checked into net # — Net control operator					

Field Day 2008 Planning and Preparation:

Field Day Committee	
Name	Call Sign
Jim Peterson (Chairman)	K6EI
Jim De Loach	WUØI
Tom Dunbar	W6ESL
Scott Emery	AD6RY
Dave Hartzell	NØTGD
Phil Verinsky	W6TQG
Grant Willner	AD6RE
Marc Ziegler	W6ZZZ

General Information	
Date	June 28-29, 2008
Set-up	Starts Friday 1100 PDT
Operation	Saturday 1100 PDT to Sunday 1100 PD T
Call sign	K6EI to request 1x1 special event call sign
GOTA call sign	AD6RE
Location	Mora Hill, Rancho San Antonio Open Space Preserve (access is Mora Drive)
Latitude / Longitude	37.3358 / 122.0993

Band Captains for 2008 8A Operation			
Band(s)	Mode(s)	Captain(s) and Call Sign(s)	Category
80M-15M	CW	Jim Peterson, K6EI	1
80M-15M	Digital	Phil, W6TQG	2
80M-15M	SSB	Scott, AD6RY	3
80M-10M	Flex(2)	Jim De Loach, WUØI	4
10M	SSB	Tom, W6ESL	5
6M	SSB/FM	Tom, W6ESL	6
2M	SSB/FM	Tom, W6ESL	Free
220 MHz / 1.2 GHz	SSB/FM	Tom, W6ESL	7
440 MHz	SSB/FM	Tom, W6ESL	8
80M-10M	GOTA(2)	Grant, AD6RE	Free
TBD(1)	Satellite	Dave, NØTGD	Free
Notes: (1) TBD = To be determined. (2) Flex and GOTA operation will be coordinated not to interfere with the other HF stations.			

Site Operations	
Note	Explanation
1	No open flames at Mora Hill (no camp stoves, Coleman -type lanterns, etc.)
2	No generators running after sunset or before 0700 PDT
3	Need 15 fire extinguishers
4	Garbage must be brought home in bags.

WVARA Field Day, June 27-29, 2008: by Jim Peterson, K6EI

Where: This year's Field Day operation will be at the top of Mora Hill, located in the San Antonio Open Space Reserve near the Magdalena exit off of Highway I-280 in Los Altos Hills.

When: Set-up of the tents, antennas and equipment will begin at 11 a.m. on Friday, June 27. Please come Friday morning or afternoon if possible — we will need all the help we can get! Our plan is to be completely set up by evening so that we can do some recreational operating and test our antennas on Friday night. Several of us expect to spend Friday night on Mora Hill.

Final set-up activities will occur on Saturday morning. *We need operators!* Field Day operations officially begin on Saturday at 11 a.m. and continue until 11 a.m. on Sunday. Our goal is to keep all of the HF stations in operation the full 24 hours. Tear-down and packing activities will probably last from 11 a.m. until about 2 p.m. on Sunday.

Parking: Parking at the Field Day site is limited. As a result, we are limiting the vehicles parked at the site to individuals who plan to stay on the hill for 4 hours or longer. For the rest, we recommend parking down the hill on surface street locations.

Warnings: Do not park within 200 feet of the gate. There are "No Parking" signs in the area, and parking enforcement personnel do issue citations to violators.

Specific Bonus Point Opportunities:

- Education tutorial
- Non-traditional mode demonstrations (Amateur TV, APRS, etc.)
- Satellite station
- NTS bulletins — submit to Scott, AD6RY

What to bring:

- Hot weather gear (straw hat, sun screen, sun glasses, etc.)
- Sturdy shoes
- Water, Gatorade, etc. (There is no running water at the site.)
- Sweater or warm coat for late night (temperatures will drop to the upper 50F degree range)
- A camera or camcorder

What color is your problem? by Bill Schweber
(From *Electronic Engineering Times*, May 12, 2008)

At their core, engineering and design are about problem solving. The solutions may involve adapting existing techniques to new problems, or developing entirely new technologies and techniques to “push the envelope.”

Of course, not all problems are created equal. There are known problems with known solutions, known problems with unknown solutions, and unknown problems with unknown solutions. Those in the first group are well-defined and bounded, with reasonable and relatively painless means of redress. The second group's solutions may pose major negatives or design impact. And the third group is plain maddening. These are the problems you do not know you have until something — often apparently unrelated — does not go as expected, or you can not figure out what is going on, and therefore the form of the solution is unknown as well. In many cases, the interim solution may be a patch that does not really address the problem but deludes you into thinking you have — until it resurfaces.

If you assume that your relatively modest project will not be affected by this third class of problem, case studies document that is not associated solely with leading-edge efforts; it can occur in well-established designs and processes that suddenly go bad.

Indeed, the hierarchy of problems is part of the underlying signal-processing challenge. In his text, *Detection, Estimation, and Modulation Theory*, Harry L. Van Trees defined three difficulty levels for signal recovery. At the lowest level is the detection of signals with known, predefined sets of values (digital signals); then comes the estimation of the value of an analog signal at a single time point; and at the top of the pyramid is the continuous estimation (demodulation) of an analog signal with many unknowns, such as a radar return. In each case, the more you know about the statistics of the associated noise environment (Gaussian, Rayleigh, Poisson, impulse), the better off you are.

Really challenging problems can go beyond the three levels. In the 1920s, before quantum physics as we know it was developed, the leading scientists were puzzled by contradictions in reputable experimental data and in the theories they had developed to explain those results. Werner Heisenberg wrote a short treatise summarizing the data and conflicts, then closed with this plea to the community: “Some new ideas are needed here.”

But for those who are not on the cutting edge of science, there is more modest fear: that they will encounter a problem in that murky subclass for which there are no real solutions — at least none that are acceptable or attainable. That is what worries many designers the most.

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Reinforcing the Art of the Estimate— by Bill Schweber
(From: *Electronic Engineering Times*, May 26, 2008.)

A recent press release about a high-temperature-superconductor (HTS) power transmission line going into service boasted that it could carry 375 megawatts, enough to service up to 300,000 homes. The same week, a short item in *The Wall Street Journal* reported on a 900-megawatts line that would supply up to 900,000 homes.

I always wonder when I see numbers thrown around like popcorn, so I did a quick calculation. The first case works out to 1,250 watts per household, or about 10 amperes at 125 VAC; the second corresponds to 1 kilowatt per household, or 8 amperes each. Considering that most homes in the United States run at least 100 amperes of AC service, all I can say is that the customers in these homes know how to live small...or maybe that phrase "up to" is the key?

Perhaps the error is due to an overzealous public relations person misapplying numbers, a calculation error, or power companies hoping to imply that their new lines are helping them get an even larger customer base. While the cause does not matter here, these examples show how casually numbers are used to add credibility, and how we as engineers should do a basic reality check when we see them.

Unfortunately, it is easier to be dazzled by numbers with implied precision than to stop, think and use some rough estimates as a sanity check. We are so used to dealing with reasonably good numbers on credible data sheets that we forget that not all sources are quite so straightforward.

The Wall Street Journal has a regular column ("The Numbers Guy") that looks at both the sources and extrapolations of some often-cited numbers. Among the more ridiculous are the annual "surveys" of how much driving people will do on vacation, or how much they will spend on holiday gifts. These surveys are based on a very small sample — culled via landline telephone — of what people say they might do. Then they are extrapolated and promoted relentlessly to the media. It is hard to know what is worse: the polling method (that it is, people saying what they might do); or that it is extrapolation from such a small data set.

Before ubiquitous calculators and personal computers, engineers would routinely do a rough estimate based on their feel for the situation — as a sanity check. That forced a person quickly to check where the numbers were coming from, and where they were going to lead. It is still a good idea to do this, before false precision leads to foolish conclusions.

Watching the Magnetics: An Eternal Story— by Bill Schweber
(From *Electronic Engineering Times*, May 12, 2008)

Ah, the magnetics: familiar to all, well understood by very few. I was reminded of this during a conversation with Tony Armstrong, power product marketing manager at Linear Technology, about an upcoming DC/DC converter that operates in a switching frequency range of less than 1 to more than 5 MHz. I asked how many engineers would consider using the part at the higher end, and he said, "Very, very few."

Seems there's a sweet spot of operation around 2 MHz, where you get good efficiency, small footprint, manageable EMI and, just as important, many suppliers of suitable inductors. At 5 MHz, there's only one credible supplier. And while most electronic engineers know the primary parameters of inductors, it's the second- and third-order parameters that make or break a leading-edge, high-frequency design.

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Another question: Why the designation “L” for inductor, when we use the more logical “R” for resistor and “C” for capacitor? One theory is that it honors Heinrich Lenz, who formulated the law of induction in 1834. Whatever the reason, the inductive time constant is quite long, you might say.

West Valley Amateur Radio Association

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